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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/556,122  | 11/09/2005  | Helmut Schlitz       | 3926.215            | 4364             |
| 41288   | 7590        | 12/11/2007           | EXAMINER            |                  |
| STEPHAN A. PENDORF, P.A.<br>PENDORF & CUTLIFF<br>5111 MEMORIAL HIGHWAY<br>TAMPA, FL 33634 |             |                      | NGUYEN, VU Q        |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                               |                                |  |
|------------------------------|-------------------------------|--------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/556,122 | Applicant(s)<br>SCHLITZ ET AL. |  |
|                              | Examiner<br>Vu Q. Nguyen      | Art Unit<br>3683               |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/19/2007</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim recites the limitation "the ring land (8) of the friction ring (4) exhibits slots (34) in a circumferential direction which point radially outwards and feature an end bore (36) on their outer end." It is unclear exactly how the slots are exhibited in a circumferential direction. Does this mean that the slots are merely arranged around the circumference of the ring land of the friction ring? Also, it is unclear how the slots point radially outwards. Does this mean that the slots extend in a radial direction? Lastly, it is unclear how the slots feature an end bore on their outer end. In light of the specification and Fig. 1, it appears that the end bores (36) are spaced radially and axially from the slots (36). Are the end bores connected to the slots somehow? If so, how?

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over British Patent Document GB 1412758 (Warrallo) in view of Japanese Patent Document JP 2002-48167 ('167).

Regarding claim 1, Warrallo discloses in Fig. 5, a brake disk (3) with at least one friction ring (9) which is connected to a brake disk hub (1) by means of a joining arrangement (7) in which the friction ring and the brake disk hub each feature a concentric ring land (6, 14) and the ring lands of the friction ring and the brake disk hub overlap (see Fig. 5), wherein elements of the joining arrangement pass through recesses in the ring lands (see bolts 7 passing through recesses in ring lands 6, 14 in Fig. 5), said brake disk further comprising a support ring (5) such that the ring land of the friction ring is located between the support ring and the ring land of the brake disk hub (see Fig. 5), wherein the ring lands are connected by means of connecting pins (7) which are fixed in recesses of the support ring.

Regarding claim 1, Warrallo does not disclose expressly that the ring land (6) of the friction ring (9) exhibits slots in a circumferential direction which point radially outwards and feature an end bore on their outer end.

Regarding claim 1, reference '167 discloses a brake disk (11) comprising a friction ring (15) having a ring land (12). The ring land of the friction ring exhibits slots (2) in a circumferential direction which point radially outwards and feature an end bore (3) on their outer end (as best understood, see 112 rejection above).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the brake disk as taught by Warrallo to include slots featuring an end bore on their outer end as taught by reference '167. The suggestion/motivation for doing so would have been to restrain stress concentration to a bolt hole edge due to thermal stress caused by braking, thereby providing a brake disk which can withstand a long period of use, as taught by reference '167 (see English abstract).

Regarding claim 2, the Examiner respectfully submits that the connecting pins (7) of Warrallo are engaged (as broadly recited) into the recesses in the support ring (5).

Regarding claim 3, see Fig. 5 of Warrallo and connecting pin 7 with a thread and nut on the right side of the ring land 14 of the brake disk hub 1.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over British Patent Document GB 1412758 (Warrallo) in view of Japanese Patent Document JP 2002-48167 ('167) as applied to claims 1-3 above, and further in view of U.S. Patent No. 4049085 (Blunier).

Warrallo, as modified by reference '167, is relied upon as proposed above and applied to claims 1-3.

Warrallo or reference '167 do not disclose expressly that the connecting pins (7) are screwed into the support ring (5).

Blunier discloses a brake disk (12) comprising connecting pins (30) for joining a ring land of a friction ring (18 or 20) with a ring land (16) of a brake disk hub (10). Blunier teaches that the connecting pins can be secured in place with nuts (34), or

alternatively, the connecting pins can be screwed into threaded holes. Blunier also teaches that the connecting pins can be screwed into a support ring. See column 2, lines 49-54.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the brake disk as taught by Warrallo so that the connecting pins are screwed into the support ring as taught by Blunier. As it is well-known to one of ordinary skill in the art, and taught by Blunier as well, a screwed connection is an obvious alternative to a bolt and nut connection and one may prefer a screwed connection so that the use of nuts is unnecessary, thereby reducing the number of parts. Warrallo also suggests the use of different types of connections, as seen in the various embodiments of Figs. 6 and 8.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over British Patent Document GB 1412758 (Warrallo) in view of Japanese Patent Document JP 2002-48167 ('167) as applied to claims 1-3 above, and further in view of U.S. Patent Application Publication No. 2002/0157908 (Burgoon et al.).

Warrallo, as modified by reference '167, is relied upon as proposed above and applied to claims 1-3.

Warrallo or reference '167 do not disclose expressly that the recesses in the ring land (14) of the brake disk hub (1) are open radially outwards.

Burgoon et al. discloses a brake disk (18) connected to a brake disk hub (12) by a joining arrangement (24). The brake disk hub further comprises a recess (16) that is open radially outwards (Figs. 3-5).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the brake disk as taught by Warrallo so that the brake disk hub has recesses that open radially outwards as taught by Burgoon et al. The suggestion/motivation for doing so would have been to accommodate thermal expansion/distortion of the brake disk, as taught by Burgoon et al. (page 5, paragraph 0077).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over British Patent Document GB 1412758 (Warrallo) in view of Japanese Patent Document JP 2002-48167 ('167) as applied to claims 1-3 above, and further in view of U.S. Patent Application Publication No. 2002/0153214 (Bauer et al.).

Warrallo, as modified by reference '167, is relied upon as proposed above and applied to claims 1-3.

Warrallo or reference '167 do not disclose expressly that the friction ring (9) consists of a fiber reinforced ceramic on the basis of silicon carbide.

Bauer et al. disclose the use of fiber reinforced ceramics with matrices based on silicon carbide as material for friction rings (page 1, paragraph 0003).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the brake disk as taught by Warrallo so that the friction ring is

made of a fiber reinforced ceramic on the basis of silicon carbide as taught by Bauer et al. The suggestion motivation for doing so would have been to provide good tribological characteristics up to the highest loads and temperatures, as taught by Bauer et al. (page 1, paragraph 0003).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Q. Nguyen whose telephone number is (571) 272-7921. The examiner can normally be reached on Monday through Friday, 11:30 AM to 8:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VQN

 12/9/07  
ROBERT A. SICONOLF  
SUPERVISORY PATENT EXAMINER